

PATENT
Atty. Dkt. No. AVAN/000635US

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) A [[S]]semiconductor laser comprising: an active waveguide [[(3)]] extending in the longitudinal [[(X)]], lateral [[(Y)]] and vertical [[(Z)]] directions, comprising an active region [[(4)]], surrounded by a filler material [[(5)]] and coupled to a distributed reflector [[(7, 8)]], characterized in that said distributed reflector [[(7, 8)]] is implemented in said filler material [[(9)]] along at least one of the lateral sides of the active region [[(4)]] and essentially parallel to them, in the form of at least a first configuration [[(7, 8)]] with a photonic band gap along said longitudinal axis [[(X)]].
2. (Currently Amended) The [[L]]laser as claimed in of claim 1, characterized in that said first configuration [[(7, 8)]] extends over one portion at least of the extension [[(h)]] of the active region [[(4)]] in the vertical direction [[(Z)]], and over one portion at least of the extension [[(h)]] of the filler material [[(5)]] in the vertical direction [[(Z)]].
3. (Currently Amended) The [[L]]laser as claimed in one of claim[[s]] 1 or 2, characterized in that said first configuration [[(7, 8)]] is a first photonic crystal formed by localized etching of the filler material [[(5)]] in such a manner as to form hollow columns [[(9)]] there or to leave columns of material remaining there, these columns comprising a periodic grating of diffracting elements with a lattice in the horizontal plane, which lattice has dimensions of roughly the wavelength of laser operation.
4. (Currently Amended) The [[L]]laser as claimed in of claim 3, characterized in that said columns [[(9)]] extend essentially parallel to said vertical direction [[(Z)]] of the active region [[(4)]].
5. (Currently Amended) The [[L]]laser as claimed in one of claim[[s]] 3 or 4, characterized in that said lattice of the grating of the first photonic crystal has the shape of a convex polygon,

6. (Currently Amended) The [[L]]laser as claimed in of claim 5, characterized in that said polygon is a regular polygon.

7. (Currently Amended) The [[L]]laser as claimed in one of claim[[s]] 1-to-6, characterized in that said first configuration [[(7, 8)]] is spaced away from the lateral sides of the active region by an essentially constant distance [[(d)]].

8. (Currently Amended) The [[L]]laser as claimed in one of claim[[s]] 1-to-6, characterized in that said first configuration [[(7, 8)]] is spaced away from the lateral sides of the active region by a distance [[(d1, d2)]] which varies along the extension [[(L)]] of said active region [[(4)]] in the longitudinal direction [[(X)]].

9. (Currently Amended) The [[L]]laser as claimed in one of claim[[s]] 1-to-8, characterized in that said active waveguide comprises, on at least one of the longitudinal ends of the active region [[(4)]], a filler material [[(5)]] in which, at a distance δL from the first configuration [[(7, 8)]], reflection means [[(10)]] are formed which are implemented in the form of a second photonic band gap configuration and extending essentially parallel to the extension [[(l)]] of the active region [[(4)]] in the lateral direction [[(Y)]].

10. (Currently Amended) The [[L]]laser as claimed in of claim 9, characterized in that said second configuration [[(10)]] extends at least over the entire extension [[(h)]] of the active region [[(4)]] in the vertical direction[[(Z)]].

11. (Currently Amended) The [[L]]laser as claimed in one of claim[[s]] 9[[or 10]], characterized in that said second configuration [[(10)]]extends over the entire extension [[(l)]] of the active region [[(4)]] in the lateral direction [[(Y)]], and over one portion at least of the extension of the filler material [[(5)]]in the lateral direction [[(Y)]].

12. (Currently Amended) The [[L]]laser as claimed in one of claim[[s]] 9-to-11, characterized in that said second configuration [[(10)]] is a second photonic crystal formed by

PATENT
Atty. Dkt. No. AVAN/000635US

localized etching of the filler material [[(S)]] in such a manner as to form hollow columns [[(13)]] there or to leave columns of material remaining there, these columns comprising a periodic grating of diffracting elements with a lattice in the horizontal plane, which lattice has dimensions of roughly the wavelength of laser operation.

13. (Currently Amended) The [[L]]laser as claimed in of claim 12, characterized in that said columns [[(13)]] extend essentially parallel to said vertical direction [[(Z)]] of the active region [[(4)]].

14. (Currently Amended) The [[L]]laser as claimed in one of claim[[s]] 12 or 13, characterized in that said lattice of the grating of the second first photonic crystal has the shape of a convex polygon.

15. (Currently Amended) The [[L]]laser as claimed in of claim 14, characterized in that said polygon is a regular polygon.

16. (Currently Amended) The [[L]]laser as claimed in one of claim[[s]] 9 to 15, characterized in that said distance δL is essentially equal to a whole number times half the wavelength of laser operation in the filler material such that the first and second configurations [[(7, 8; 10)]] define a Fabry-Perot type resonant cavity.